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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RAO, SHRINIVAS H

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 09/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,949

Applicant(s)

YAMAMOTO ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Applicants' amendment filed June 25, 2002 has been entered on July 22, 2002. Therefore claims 1,2,5,6,8, 10 and 13 as recited in the amendment and claims 3,4,7,9 and 11-12 as originally filed are currently pending in the application.

Election/Restrictions

This application contains claims 14-19 drawn to an invention nonelected without traverse in Paper No. 4. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention the subject matter which applicant regards as the invention.

Amended Claims 1 and 6 recite a uniform base region of the second conductivity type disposed on said first buried region and having a uniform doping profile.

.The specification as originally filed does not describe the uniform base region as originally filed does not describe in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention the subject matter which applicant regards as the invention i.e. the uniform buried region having a uniform doping profile.

Claims 3 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim The following is a quotation of the first paragraph of 35 U.S.C. 112:

Claims 3 and 11 were previously rejected because of improper grammar usage because they recite (in line 2 thereof) "rectangular ring shape".

Applicants' respond by stating, "The claimed rectangular ring shape is designated at 7 in the embodiment of Fig. 2B. See also page 8, line 29 of the specification. Accordingly, Claims 3 and 11 are not amended."

It is noted that the previous rejection was based upon improper grammar usage namely that a ring is generally understood to have a circular shape and Applicants' are reciting a rectangular ring shape and it is understood how an element (ring) that has a circular shape will have a rectangular shape. Therefore the recited element either has a rectangular shape or a circular shape but cannot have both rectangular and circular shape.

It appears that Applicants' bona fide attempt to respond to the rejection completely misses the point and presents arguments regarding new matter situation by

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referring to the specification figures and page /lines where support for the recitation can be found.

However, the previous rejections of claims 3 and 11 as being indefinite (i.e. improper grammar useage) is maintained and made Final.

Applicants' state that claims 1-13 were rejected under 35 U.S.C. Section 112 , Second paragraph.

Actually claims 2,3,5,8 10 and 112 were rejected under 112(2) in the previous Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergeron et al. (U.S. Patent No. 4,326,212, herein after Bergeron) previously applied and De La Moneda (U.S. Patent No. 4,149,906, herein after Moneda).

It is noted for the record that the Applicants' have changed the scope of all the pending claims by amending the two independent claims 1 and 6 from which all other dependent claims (currently under consideration) depend directly/indirectly.

As stated above claims 1 and 6 were not rejected under 112 (2) in the previous Office Action.

It is further noted that claims 1 and 6 contain several new limitations added by the amendment of June 25, 2002 eg. claim 1 line 6/claim 6 line 7 "a uniform dopant profile" lines 12-14 "the first and second main electrode regions being aligned in a lateral direction parallel to the top surface of said uniform base region." lines 15-16 "such that said first main electrode region is disposed in the center at the top surface of the graded base region" line 17 "gradually along the lateral direction", therefore the scope of the independent claims 1 and 6 have been changed beyond any shadow of doubt.

Further all dependent claims 2-13 depend directly/indirectly upon claim 1 or 6 and therefore their at least for this reason has been changed.

Thus the scope of all the pending claims under consideration has been changed.

With respect to claims 1 and 6, Bergeron teaches substantially the limitations previously recited in the claims 1 and 6.

Amended claims 1 and 6 presently recite, (assuming arguendo that Applicants' are able to show support in the specification as originally filed) "a uniform base region of the second conductivity type disposed on said first buried region and having a uniform doping profile."

The previous Office Action stated that Bergeron in fig. 1 e # 36 and 40 and col. 4 lines 58 describes a "a uniform base region of the second conductivity type disposed on said first buried region".

Bergeron does not specifically mention or describe a uniform base region having an uniform doping profile.

However, Moneda, patent from the same filed of endeavor, describes in its abstract line 11, etc. a uniform base region having an uniform doping profile to avoid forming local pockets of uneven capacitance to the flow of injected carriers there across.

The next limitation presently added is the first and second main electrode regions being aligned in a lateral direction parallel to the top surface of the uniform base region. (Bergeron 1 h # 54,60,62 etc. parallel to fig. 1e # 36, 40, Moneda fig. 8 A).

The limitation, " such that said first main electrode region is disposed in the center at the top surface of the graded base region " (See Bergeron fig. 1h # 54 in center of 40, Moneda fig. 8A).

The limitation "the graded base region having a doping profile such that impurity concentration decreases gradually along the lateral direction towards the second main electrode region from the first main electrode region. (Bergeron col. 5 lines 52-57, Moneda col. 1 lines 65-68).

Claims 2and 10 recite the second electrode in ring shape being formed in a ring shape along the top surface of said uniform base region (Bergeron Figs. 1h-1j).

Claims 5, 8 and 12 are amended to recite them in correct English without substantially change in thier scope an d the previous rejection are incorporated here by reference and maintained.

Therefore all pending claims are rejected for reasons previously set out and those stated above.

Response to Arguments

Applicant's arguments filed July 22, 2002 have been fully considered but they are not persuasive for reasons set out at length above.

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that as shown above the scope of the claims have been changed and all independent claims (1 and 6) have been amended in scope thus requiring a new rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (703) 3065945. The examiner can normally be reached on 8.00 to 5.00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 7463926 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 3067722.



Steven H. Rao

Patent Examiner

September 23, 2002



OLIK CHAUDHURI
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